

REMARKS

The Office Action mailed January 9, 2008, has been carefully considered. Accordingly, it is believed that the present Amendment places the application in condition for allowance. Reconsideration is respectfully requested.

With this amendment, claims 1, 5-10, 12-14, 33, and 35 are cancelled without prejudice. Claims 16, 31-32, and 34 have been amended. The amendments to "diethyldiethoxygermane" in claims 16 and 32 correct a typographical error and are responsive to the lack of written description rejection under §112. In claims 16, 31-32, and 34, the recitations of organic reactants have been revised to correct typographical errors and for completeness.

In the Office Action, claims 33 and 35 were rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement. Claims 33 and 35 have been cancelled. The presently recited "diethyldiethoxygermane" reactant in amended claim 16 finds clear antecedent basis in the specification at page 8, paragraph [0037]. This ground of rejection is believed to be moot in light of the cancellation of claims 33 and 35 and the amendment to claim 16.

Also in the Office Action, the Examiner rejected claims 1, 5-10, 12-14, 16, 21, 22, 24, 25, and 27-32 under 35 USC §112, first paragraph for lack of enablement. Specifically, Examiner stated that

"while the specification was enabling for forming an organic siloxane by hydrolysis and condensation of an organic silane selected from trimethylethoxysilane; $(\text{Me}_3\text{SiO}(\text{CH}_2\text{CH}_2\text{O})_4\text{CH}_3)$; 3-glycidoxypropyldimethethoxysilane; 1,1-dimethyl-1-sila-2-oxacyclohexane; and methyltriethoxysilane with trypsin or by condensation of the corresponding organic silanols with trypsin, it did not reasonably provide enablement for forming any organic compound by reacting any organic reactant or organic intermediate as defined in claims 1, 16, 31, and 32 with any hydrolase selected from trypsin, pepsin, papain, *Candida antarctica* lipase, *Candida antarctica* lipase B, *Rhizomucor miehei* lipase, wheat germ lipase, or a combination thereof." (Office Action, pp. 3-4)

Claims 1-15 have now been canceled, mooted the rejection with respect to those claims.

With respect to Claim 16, claim 16 has been amended to recite a method of forming an organic molecule using specific recited hydrolase enzymes with specific recited organic reactants selected from the group consisting of: $(\text{CH}_3)_2\text{Si}(\text{OCH}_3)_2$; $(\text{CH}_3)(\text{CF}_3\text{CH}_2\text{CH}_2)\text{Si}(\text{OCH}_3)_2$; $(\text{C}_6\text{H}_5)(\text{CH}_3)\text{Si}(\text{OCH}_3)_2$; $(\text{CH}_3\text{CH}_2)_2\text{Ge}(\text{OCH}_2\text{CH}_3)_2$; $(\text{CH}_3)\text{Si}(\text{OCH}_2\text{CH}_3)_3$; 1,3,5,7-tetramethyl-1,3,5,7-tetramethoxy-cyclotetrasiloxane; 1,3-bis(hydroxy)tetramethyldisiloxane; $[(\text{HO})_2(\text{CH}_3)\text{SiO}]_3\text{SiCH}_3$; $(\text{Me}_3\text{SiO}(\text{CH}_2\text{CH}_2\text{O})_4\text{CH}_3)$, 3-glycidoxypropyldimethylethoxysilane, 1,1-dimethyl-1-sila-2-oxacyclohexane, trimethylsilanol, trimethylethoxysilane, or a combination thereof. The hydrolase enzyme is selected from the group consisting of: *Candida antarctica* lipase, *Candida antarctica* lipase B, *Rhizomucor miehei* lipase, wheat germ lipase, trypsin, cutinase, or a combination thereof; and catalyzes the hydrolysis and condensation of the organic reactant to form the organic molecule.

The specification, Example 2 at pages 14-16, shows that all of the recited hydrolase enzymes recited in claim 16 (with the exception of cutinase, not tested) were effective to catalyze the formation of a siloxane bond in one of the recited organic reactants (trimethylsilanol). The inventors' declaration, previously filed and of record, demonstrates that cutinase catalyzes the hydrolysis and condensation of trimethylsilanol and dimethyldimethoxysilane and that trypsin catalyzes the hydrolysis and condensation of diethyldiethoxygermane. Example 9, at pages 29-31, demonstrates that trypsin was effective to catalyze the hydrolysis and condensation of trimethylethoxysilane, another of the specifically recited organic reactants in Claim 16. Example 10, pages 31-34, demonstrates the hydrolysis and condensation of additional alkoxy silane compounds. Claims 31 and 32 have similarly been amended to recite specific hydrolase and/or cutinase enzymes and specific organic reactants.

Applicants submit that the specification, including working examples, and the Declaration provide objective proof of enablement of the invention which is commensurate in scope with the claims as amended. While the Examiner criticized the Declaration as supplying "post filing data," that criticism is misplaced. The Declaration provides further evidence that the specification as filed was enabling for the subject matter claimed. The issue is whether a person skilled in the art, with knowledge supplied by the specification, could have made and used the methods as described therein. The Declaration provides objective evidence that one skilled in the art, following the teachings in the specification as filed, and using the reactants and catalysts

as described therein, could successfully practice the claimed invention using cutinase enzyme as a catalyst and both silicon and germanium compounds as the organic reactants.

Applicants submit that claims 16, 21, 22, 24, 25, and 27-32, as amended, are enabled by the specification, whereby the rejection under 35 USC. §112, first paragraph, has been overcome. Reconsideration is respectfully requested.

Also in the Office Action, claims 1, 5, 9, 10, 16, 19, 24, 25, 27-32, and 34 were rejected under 35 USC §102(b) as being anticipated by Cha et al. (*Silicatein filaments and subunits from a marine sponge direct the polymerization of silica and silicones in vitro*). The Examiner asserted that Cha et al. teach the formation of a polymerized silica product from tetraethoxysilane using an enzymatic hydrolysis and condensation with the proteases trypsin, papain or silacatein in aqueous buffer at neutral pHs and temperatures of 20°C. The rejection of claims 1, 5, 9, and 10 has been mooted by the cancellation of those claims. Applicants submit that the remaining claims, as amended, which were rejected are not anticipated by Cha.

Claims 16, 31, and 34 have been amended to delete tetraethoxysilane (TEOS) as an organic reactant. Claim 32 did not and does not recite tetraethoxysilane as an organic reactant, and accordingly, applicants believe that claim 34 was rejected in error. In any event, Claims 16, 19, 24, 25, 27-32, and 34, as amended, are not anticipated by Cha.

Also in the Office Action, claims 1, 5, 9, and 10 were rejected under 35 USC §103(a) as being unpatentable over Friedrich (WO02/22842) in view of the 1997 Sigma catalog. The cancellation of claims 1, 5, 9, and 10 is believed to moot this ground of rejection.

It is believed that the above represents a complete response to the rejections set forth in the Office Action, and places the present application in condition for allowance. Reconsideration and an early allowance are requested.

Respectfully submitted,

/Timothy W. Hagan/
Timothy W. Hagan
Reg. No. 29,001

One Dayton Centre
One South Main Street, Suite 1300
Dayton, Ohio 45402
Telephone: (937) 449-6430
Facsimile: (937) 449-6405